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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/625,495

07/23/2003

Harry Hedler

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26161

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08/26/2004

FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER

OWENS, DOUGLAS W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,495

Applicant(s)

HEDLER, HARRY

Examiner

Douglas W Owens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 8, 10-15, 17-19, 21 and 24-29 is/are rejected.
- 7) ☒ Claim(s) 4, 6, 7, 9, 16, 20, 21, 23, 30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/23/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION***Specification***

1. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper (Page 1, lines 6 and 7). Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

Suggested Claim Amendments

2. It is suggested that in claims 4 and 20, the term "an interrupted support region" be replaced with --a region with individual discreet supports--.

Claim Objections

3. Claim 15 is objected to because of the following informalities: the word "providing" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

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said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 3, 5, 10, 12 – 15, 17 – 19, 24, 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication No. WO 01/75969 to Haimerl et al. in view of US Patent No. 5,901,050 to Imai.

Regarding claim 1, Haimerl et al. teach a method for connecting an integrated circuit to a substrate, the method comprising:

providing a first electrical contact structure (Figs 20 and 21 (19 or 16), for example) on the integrated circuit;

providing a second electrical contact structure (12) on the substrate;

the second electrical contact structure having an elastic elevation (3) thereon (see abstract),

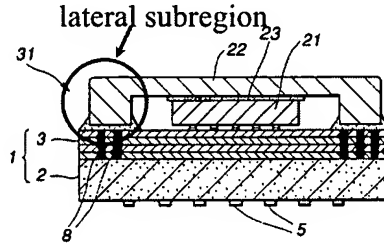
forming a current path (4, 1, 16 (in the alternative by bringing the first contact (16) into mechanical contact with the second contact (12))) between the first electrical contact structure and the second electrical contact structure; and

attaching the integrated circuit and the substrate, such that the elastic elevation is compressed.

Haimerl et al. do not teach attaching the integrated circuit to a frame structure or attaching the frame to the substrate. Imai teaches attaching a frame structure (22) to an integrated circuit (21) and attaching the frame to the substrate (1). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the method taught by Haimerl et al., since it is desirable to protect the IC, as well as provide a more secure connection to the substrate.

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Regarding claim 2, Haimerl et al. do not teach a method, further comprising providing a lateral subregion in the frame structure, wherein the lateral subregion at least partially surrounds the IC. Imai teaches a method, further comprising providing a lateral subregion (See figure at right) in the frame structure, wherein the lateral subregion at least partially surrounds the IC (Col. 5, lines 58 – 60). It would



have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the method taught by Haimerl et al. for the reasons discussed above.

Regarding claim 3, Haimerl et al. do not teach a method, further comprising selecting the subregion to include a peripheral annular region. Imai teaches a method, further comprising selecting the subregion to include a peripheral annular region, wherein the peripheral subregion can be selected to include any peripheral region inside the frame. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the method taught by Haimerl et al. for reasons discussed above.

Regarding claim 5, Haimerl et al. do not teach a method, wherein the subregion is not in contact with a surface of the substrate when the current path is formed. In the proposed combination of Haimerl et al. and Imai, the subregion would necessarily have not been in contact with the substrate when the current path is formed, since it would not have been possible to form the current path between the elastic elevation (3) and the electrical contact (12). In other words,

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the current path must be formed before joining the integrated circuit with the substrate, where the current path is taken to be the physical structure (4, 1, 16) through which the current will travel. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the method taught by Haimerl et al. for reasons discussed above.

Regarding claim 10, Haimerl et al. do not teach a method, further comprising forming a unitary frame structure in which the subregion and a base region are integral with each other. Imai teaches a method, further comprising forming a unitary frame structure in which the subregion and a base region are integral with each other, wherein the base region is taken to be the bottom portion of the frame that is attached to the substrate. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the method taught by Haimerl et al. for reasons discussed above.

Regarding claim 12, Haimerl et al. do not teach a method, further comprising soldering the subregion to the substrate. Imai teaches a method further comprising soldering the subregion to the substrate (Col. 5, lines 58 – 60). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the method taught by Haimerl et al. for reasons discussed above.

Regarding claim 13, Haimerl et al. teach a method, further comprising:
bringing said first electrical contact structure (16) and said second electrical contact structure (12) into mechanical contact (Fig. 20), such that

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said first electrical contact structure and said second electrical contact structure are displaceable with respect to each other in a common plane.

Regarding claim 14, Haimerl et al. teach a method, further comprising disposing the elastic elevation on the first electrical contact (16), where the word “on” is taken to mean “in contact with”.

Regarding claim 15, Haimerl et al. teach a method, wherein the second electrical contact structure (12) has a planar terminal region.

Regarding claim 17, Haimerl et al. teach a circuit arrangement comprising:

- a first electrical contact structure (Figs 20 and 21 (19 or 16), for example) on the integrated circuit;

- a second electrical contact structure (12) on the substrate;

- the second electrical contact structure having an elastic elevation (3) thereon (see abstract),

- the first electrical contact structure being in electrical communication with the second electrical contact structure; and

- the elastic elevation being compressed when the integrated circuit and substrate are attached (Fig. 21).

Haimerl et al. do not teach attaching the integrated circuit to a frame structure or attaching the frame to the substrate. Imai teaches attaching a frame structure (22) to an integrated circuit (21) and attaching the frame to the substrate (1). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the arrangement taught by Haimerl et al.,

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since it is desirable to protect the IC, as well as provide a more secure connection to the substrate.

Regarding claim 18, Haimerl et al. do not teach a circuit arrangement, wherein the frame structure includes a lateral subregion at least partially surrounding the IC. Imai teaches a circuit arrangement, wherein the frame structure includes a lateral subregion at least partially surrounding the IC (See figure at above in the discussion of claim 2) (Col. 5, lines 58 – 60). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the arrangement taught by Haimerl et al. for the reasons discussed above.

Regarding claim 19, Haimerl et al. do not teach an arrangement, wherein the frame structure includes a peripheral annular region. Imai teaches an arrangement, wherein the frame structure includes a peripheral annular region. Because there is no defined boundary for the subregion, the peripheral subregion can be selected to include any peripheral region inside the frame. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the arrangement taught by Haimerl et al. for reasons discussed above.

Regarding claim 24, Haimerl et al. do not teach an arrangement, wherein the frame structure is a unitary piece. Imai teaches an arrangement, wherein the frame structure is a unitary piece. It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the arrangement taught by Haimerl et al. for reasons discussed above.

Regarding claim 26, Haimerl et al. do not teach an arrangement, further comprising a solder between the substrate and the frame. Imai teaches an

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arrangement, further comprising a solder between the substrate and the frame (Col. 5, lines 58 – 60). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Imai into the arrangement taught by Haimerl et al. for reasons discussed above.

Regarding claim 27, Haimerl et al. teach an arrangement wherein, said first electrical contact structure (16) and said second electrical contact structure are (12) in mechanical contact (Fig. 20), such that

said first electrical contact structure and said second electrical contact structure are displaceable with respect to each other in a common plane.

Regarding claim 28, Haimerl et al. teach an arrangement, wherein the elastic elevation (3) is connected to the first electrical contact (16).

Regarding claim 29, Haimerl et al. teach an arrangement, wherein the second electrical contact structure (12) has a planar terminal region.

6. Claims 8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haimerl et al. and Imai as applied to claims 1 and 17 above, and further in view of US Patent No. 5,851,337 to Chen.

Haimerl et al. teach a method and device, wherein bonding pads (16) are disposed on the elastic elevation. Neither Haimerl et al. nor Imai teach a method or device, wherein the pad on the elastic elevation comprises a metalization. Chen teaches bonding pads comprising metal (Col. 1, lines 17 – 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Chen into the proposed method and

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arrangement of Haimerl et al. and Imai, since it is desirable to use materials that are known to be reliable for the intended use.

7. Claims 11 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haimerl et al. and Imai as applied to claims 1, 2 and 17 above, and further in view of US Patent Application Publication No. 2002/0113306 to Kwon et al.

Neither Haimerl et al. nor Imai teach a method or arrangement, wherein the subregion (frame) is adhesively bonded to the substrate. Kwon et al. teach a method and arrangement, wherein a subregion is adhesively bonded to a substrate (Paragraph [0023]). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Kwon et al. into the proposed method and arrangement of Haimerl et al. and Imai, since it is desirable to prevent cracks and delamination (See paragraph [0010] Kwon et al.).

Allowable Subject Matter

8. Claims 4, 6, 7, 9, 16, 20, 21, 23 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: The art of record does not teach, alone or in combination, a method or arrangement including the limitations cited in the objected claims.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Douglas W. Owens". The signature is written in a cursive, flowing style.

Douglas W. Owens
Patent Examiner